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EXAMINER	
ROSSI, JESSICA	
ART UNIT	PAPER NUMBER
1733	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/768,024	HARCOURT, ROBERT	
	Examiner	Art Unit	
	Jessica L. Rossi	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/12/04, Amendment*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,9,11-13,17-20,25-30 and 33-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,9,11-13,17-20,25-30 and 33-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Consideration

1. The request filed on 7/12/04 for a RCE under 37 CFR 1.114 based on parent Application No. 09/768,024 is acceptable and a RCE has been established. An action on the RCE follows.

Response to Amendment

2. This action is in response to the amendment dated 7/12/04. Claims 5-8, 14-16, 21-24, 21, 37, and 43-47 were cancelled. Claims 3, 9, 11-13, 17-20, 25-30, and 33-36 are pending.

3. Support for vulcanizing the hose using a non-contact heater can be found on p. 4, line 8.

4. The rejection of claim 3 under 35 U.S.C. 102(b) as being anticipated by Voss (US 3859408; of record), as set forth in paragraph 4 of the previous office action, has been withdrawn in light of the present amendment; note Voss teaches the heater contacting the hose.

Claim Objections

5. Claim 35 is objected to because of the following informalities: "," should be deleted after "and" in line 3. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 25-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 25, it recites the limitation "a woven fabric" in line 4. There is insufficient antecedent basis for this limitation in the claim. It is suggested to change this phrase to --said woven cloth--.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 3 and 11-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Merck et al. (US 3038523; of record) in view of Dougherty (US 4488921; of record), as set forth in paragraph 6 of the previous office action.

With respect to claim 3, Merck is directed to making a hose. The reference teaches extruding an interior lining 17 of the hose over a mandrel 16 (Figure 1; column 2, lines 50-51), which terminates after extrusion of the cover at 105 (Figure 5; column 5, lines 10-12), pressurizing the mandrel-less hose by trapping pressurized fluid inside the hose by sealing engagement of the hose with the end of the mandrel and pinch rollers 113/114 located downstream of the mandrel (Figure 1a; column 5, lines 2-27 and 47-48), and vulcanizing the hose from the outside to the inside using a heated curing tube 115 having a jacket through which heated oil circulates (note that tube 115 is identical to tube 33; column 5, lines 45-47; column 3, lines 9-12). The reference is silent as to pressurizing the inside of the hose by trapping air inside the hose and vulcanizing the hose using a non-contact heater.

It is know in the art to make a hose by trapping air or fluid inside the hose during vulcanization by sealing both ends of the hose, as taught by Dougherty (column 8, lines 59-62). One reading the Merck reference as a whole would have appreciated that the means for

pressurizing the hose is not critical to the invention and therefore would have been motivated to use air as an alternative to fluid because such is known in the art, as taught by Dougherty, where only the expected results of maintaining the shape of the hose during vulcanization would have been achieved.

It is known in the art to vulcanize a hose having pressurized fluid or air trapped within by passing the hose through a chamber in which various alternative methods, including hot liquid and microwaves, are used to vulcanize the hose, as taught by Dougherty (column 8, lines 59-63), wherein the skilled artisan would have appreciated that microwaves constitute a non-contact heater.

One reading the Merck reference as a whole would have appreciated that the means for vulcanizing the hose is not critical to the invention and therefore would have been motivated to vulcanize the hose of Merck by passing the same through a microwave chamber as an alternative to the heated tube 115 because such is known in the art, as taught by Dougherty, wherein only the expected results of vulcanizing the hose would have been achieved. **Please note that the present invention discloses a microwave heater as a non-contact heater (p. 11, lines 4-7).**

With respect to claim 11, all the limitations were addressed above with respect to claim 3 except the hose being drawn through the pinch rollers by a haul-off and vulcanizing the hose intermediate the mandrel and the pinch rollers.

As for the haul-off, Merck teaches the hose being drawn through the pinch rollers 113/114 by haul-off 104 (Figure 1a; column 4, lines 65-66).

As for the location of the heater 115, Merck teaches it being located after the mandrel 16 and before the pinch rollers 113/114 (Figure 1a; column 5, lines 2-3).

Regarding claim 12, selection of a vulcanization temperature would have been within purview of the skilled artisan at the time the invention was made depending on the material of the hose. However, Merck teaches vulcanizing between 340-380°F, wherein 340-350°F falls within the claimed range.

10. Claims 9 and 33-36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Merck et al. in view of Dougherty as applied to claim 3 above, and further in view of Hopkins (US 4121962; of record) and the collective teachings of Gattrugeri (US 3904144; of record) and Kunz et al. (US 6296054; of record), as set forth in paragraph 7 of the previous office action.

With respect to claim 9, all the limitations were addressed above with respect to claim 3 except a check valve being located in the mandrel.

Merck in view of Dougherty teaches the air being supplied into the interior of hose 17, as it exits the mandrel 16, through a tube 71 located within the mandrel and terminating at 105 along with the mandrel (Figure 5; column 5, lines 5-12 and 22-24).

It is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized air of Merck in view of Dougherty by placing a check valve within the tube 71, which is located within the mandrel 16, because it is known to

use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Merck teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 3 (Dougherty teaches heating by microwaves – radiant heating).

Regarding claim 36, the skilled artisan would have appreciated that the air inside the hose would control the diameter of the hose.

11. Claim 36 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Merck et al., Dougherty, Hopkins, and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler (US 4490316; of record), as set forth in paragraph 8 of the previous office action.

Regarding claim 36, if it is not taken that the air inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because

such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

12. Claim 17 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tankaka (US 4326805; of record) in view of Merck et al. and Dougherty, as set forth in paragraph 9 of the previous office action.

With respect to claim 17, Tanaka is directed to making a hose. The reference teaches extruding rubber resin (column 8, lines 36-38 and 39-40) onto, into, and through a woven fabric 4 (Figure 3; column 3, lines 20-25; column 6, lines 26-27; column 8, lines 50-52) located on a mandrel 25 (Figure 10; note Figure 10 is embodiment that is variation of that depicted in Figure 4 when resin not extruded; column 5, lines 14-15), which only has a length long enough to complete extrusion (column 6, lines 43-46), passing the mandrel-less hose through a cooling bath 71 to solidify the resin (column 8, lines 54-55), and guiding the hose by means of rollers to a take-up winding machine (column 8, lines 18-25). The reference is silent as to pressurizing the hose with a gas, sealing the inside of the hose with respect to the mandrel, pulling the hose through a non-contact heater to vulcanize it, and pinching and sealing the vulcanized hose as it leaves the heater.

As set forth above in paragraph 9 above, Merck teaches extruding an elastomeric interior lining 17 (column 1, lines 12-13) of a hose over a mandrel 16, which terminates after extrusion at 105, pressurizing the mandrel-less hose by passing pressurized fluid through tube 71 located within the mandrel and trapping the fluid inside the hose by sealing engagement of the hose with the end of the mandrel and pinch rollers 113/114 located downstream of the mandrel, and vulcanizing the hose from the outside to the inside using a heated curing tube 115, wherein the

skilled artisan would have been motivated to use pressurized air in place of fluid and a non-contact microwave heating chamber 45 in place of tube 115, as taught by Dougherty, for the reasons set forth above in paragraph 8.

Although Tanaka teaches cooling the extruded resin to solidify the same and form the finished hose, the skilled artisan would have appreciated that processing steps subsequent to extrusion, such as heating and/or cooling, are largely dependent on the type of material used to make the hose. Therefore, since Tanaka is mainly concerned with formation of the woven reinforcement and not the type of resins extruded onto it nor the subsequent processing steps used to make the finished hose, and the type of resins used are not critical to the invention such that Tanaka teaches using a variety of resins including rubber (column 8, lines 32-37), which is elastomeric, the skilled artisan would have been motivated to make the hose of Tanaka using an elastomeric material that requires vulcanization, as taught by Merck, and therefore would have been motivated to perform the processing steps of Merck in view of Dougherty following the extruding step of Tanaka because such allows for continuous vulcanization of an elastomeric hose while maintaining the shape thereof.

13. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn (US 4361455) in view of the collective teachings of Kolnische (UK 922,454) and Enomoto (US 5453229; of record).

With respect to claim 3, Arterburn is directed to making a hose. The reference teaches extruding a rubber tube 12 from an extruder 24, applying reinforcement to the tube by means of a braider, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube

from the outside to the inside at zone 36 using microwave heating (= non-contact heater) to form the hose (Figure 2; column 2, lines 22-27 and 33-55).

The reference is silent as to pressurizing the extruded rubber tube and trapping air inside the tube by sealing engagement of the tube with a mandrel and pinch rollers.

It is known in the art to make a rubber tube by extruding the rubber tube over a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78).

It is also known in the art to make a rubber hose by extruding a rubber tube over a mandrel, supplying gas through the mandrel to the inside of the tube and trapping the gas inside the tube, applying reinforcement to the tube by means of a braider, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube to form the hose, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to pressurize the extruded rubber tube of Arterburn by supplying air through a mandrel over which the tube is extruded and trap the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of the vulcanizing zone because such is known in the rubber tube extruding art, as taught by Kolnishe, wherein the air would prevent the tube from collapsing during processing steps prior to vulcanization; especially since it is known in the hose making art to pressurize an extruded hose by keeping a gaseous fluid trapped inside the hose during formation thereof, as taught by Enomoto.

With respect to claim 17, all the limitations were addressed above with respect to claim 3, except extruding the rubber of Arterburn onto, into and through a woven fabric.

Arterburn teaches braiding reinforcement 16 onto the extruded rubber tube 12 and then extruding a rubber sheath 22 onto the reinforcement (column 2, lines 22-27 and 33-50). The skilled artisan would have appreciated that the braided reinforcement is a woven fabric (see US 4488921; column 6, lines 18-22). The skilled artisan would also have appreciated that the braided reinforcement would have spaces/interstices and therefore the extruded rubber sheath would pass through the spaces/interstices.

14. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn and the collective teachings of Kolnische and Enomoto as applied to claim 3 above, and further in view of Merck et al.

With respect to claim 11, all the limitations were addressed above with respect to claim 3 except the hose being drawn through the pinch rollers by a haul-off and vulcanizing the hose intermediate the mandrel and the pinch rollers.

As for the haul-off, Arterburn in view of the collective teachings is silent as to such. Merck teaches it being known in the art to continuously vulcanize a hose by trapping pressurized fluid inside the extruded hose by sealing engagement of the hose with the end of a mandrel and pinch rollers 113/114, vulcanizing the hose, and tensioning and sealing the hose as it is drawn through the pinch rollers by a haul-off 104 (Figure 1a; column 4, lines 65-70).

Therefore, it would have been obvious to the skilled artisan to draw the pressurized hose of Arterburn through the pinch rollers of Arterburn in view of Kolnische by a haul-off because it

is known in the art to drawn a pressurized hose through pinch rollers by a haul-off, as taught by Merck, wherein the haul-off maintains tension on the hose throughout the continuous process.

As for the location of the vulcanizing zone 36, Arterburn in view of Kolnische teaches it being located after the mandrel and before the pinch rollers.

Regarding claim 12, selection of a vulcanization temperature would have been within purview of the skilled artisan at the time the invention was made depending on the material of the hose.

15. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn and the collective teachings of Kolnische and Enomoto as applied to claim 3 above, and further in view of Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, all the limitations were addressed above with respect to claim 3 except a check valve being located in the mandrel.

Arterburn in view of the collective teachings of Kolnische and Enomoto teach the air being supplied to the interior of the hose as it exits the mandrel.

It is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized air of Arterburn in view of the collective

teachings of Kolnische and Enomoto by placing a check valve within the tube 71, which is located within the mandrel 16, because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Arterburn teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 3.

Regarding claim 36, the skilled artisan would have appreciated that the air inside the hose would control the diameter of the hose.

16. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn, the collective teachings of Kolnische and Enomoto, Hopkins, and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler.

Regarding claim 36, if it is not taken that the air inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because

such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

17. Claims 3, 11-12, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto in view of the collective teachings of Kolnische and Merck et al., and also in view of Galloway (US 4155790).

With respect to claim 3, Enomoto is directed to making a hose. The reference teaches extruding a rubber hose over a mandrel 11, supplying gas through the mandrel to the inside of the hose and trapping the gas inside the hose, and vulcanizing the hose from the outside to the inside by passing it through salt bath 32, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2; column 6, lines 25-30).

The reference is silent as to trapping air inside the hose, sealing engagement of the hose with pinch rollers and vulcanizing using a non-contact heater.

As for trapping air inside the hose, the skilled artisan would have appreciated that some air would be trapped inside the hose when the gas is trapped inside the hose.

As for sealing engagement of the hose with pinch rollers, it is known in the art to make a rubber tube by extruding the rubber tube onto a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78). It is also known in the art to continuously vulcanize a hose by trapping pressurized fluid inside the extruded hose by sealing engagement of the hose

with the end of a mandrel and pinch rollers 113/114 located downstream of the vulcanizing means, as taught by Merck (see paragraph 9 above for complete discussion).

Therefore, it would have been obvious to the skilled artisan at the time of the invention to trap the gas inside the hose of Enomoto by sealing engagement of the hose with the mandrel of Enomoto and sealing engagement of the hose with pinch rollers located downstream of the vulcanizing means because such is known in the rubber tube extruding art, as taught by Kolnische, wherein pinch rollers prevent the gas from escaping; especially since it is known in the hose making art to trap a substance, which is used to pressurize the hose, within the interior of the hose by sealing engagement of the hose with a mandrel and pinch rollers, as taught by Merck.

It is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Enomoto as a whole would have appreciated that the vulcanizing means is not critical to the invention and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

With respect to claim 11, all the limitations were addressed above with respect to claim 3 except the hose being drawn through the pinch rollers by a haul-off and vulcanizing the hose intermediate the mandrel and the pinch rollers.

As for the haul-off, Enomoto teaches a haul-off 31 (column 4, lines 50-61). Furthermore, Merck teaches it being known in the art to continuously vulcanize a hose by trapping pressurized fluid inside the extruded hose by sealing engagement of the hose with the end of a mandrel and

pinch rollers 113/114, vulcanizing the hose, and tensioning and sealing the hose as it is drawn through the pinch rollers by a haul-off 104 (Figure 1a; column 4, lines 65-70).

Therefore, it would have been obvious to the skilled artisan to draw the pressurized hose of Enomoto through the pinch rollers of Enomoto in view of the collective teachings of Kolnische and Merck by the haul-off of Enomoto because it is known in the art to drawn a pressurized hose through pinch rollers by a haul-off, as taught by Merck.

As for the location of the vulcanizing means, Enomoto in view of the collective teachings of Kolnische and Merck teach it being located after the mandrel and before the pinch rollers.

Regarding claim 12, selection of a vulcanization temperature would have been within purview of the skilled artisan at the time the invention was made depending on the material of the hose.

With respect to claim 17, all the limitations were addressed above with respect to claim 3, except extruding the rubber of Enomoto onto, into and through a woven fabric.

Enomoto teaches braiding reinforcement 2 onto the extruded rubber tube 1 and then extruding a rubber layer 3 onto the reinforcement (column 3, lines 24-30). The skilled artisan would have appreciated that the braided reinforcement is a woven fabric (see US 4488921; column 6, lines 18-22). The skilled artisan would also have appreciated that the braided reinforcement would have spaces/interstices and therefore the extruded rubber sheath would pass through the spaces/interstices.

18. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto, the collective teachings of Kolnische and Merck et al., and also Galloway as applied to

claim 3 above, and further in view of Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, all the limitations were addressed above with respect to claim 3 except a check valve being located in the mandrel.

Enomoto in view of the collective teachings of Kolnische and Merck teach the gas being supplied to the interior of the hose as it exits the mandrel.

It is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Enomoto teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 3.

Regarding claim 36, the skilled artisan would have appreciated that the gas inside the hose would control the diameter of the hose.

19. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto, the collective teachings of Kolnische and Merck et al., Galloway, Hopkins, and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler.

Regarding claim 36, if it is not taken that the gas inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

20. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler (US 4517039; of record) in view of Galloway.

With respect to claim 11, Satzler is directed to making a hose. The reference teaches extruding a rubber hose over a mandrel 50 such that the hose forms a seal as it exits the mandrel, tensioning and sealing the hose as it is drawn through pinch rollers 78 by a haul-off 84, and vulcanizing the hose intermediate the mandrel and the pinch rollers by passing the hose through a salt bath 30 (Figure 1; column 3, lines 5-17; column 4, lines 7-8 and 19-20 and 25).

The reference is silent as to vulcanizing using a non-contact heater.

It is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Satlzer as a whole would have appreciated that the vulcanizing means is not critical to the invention (column 5, lines 16-17 – teaches "other types" of vulcanizing means could be used) and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

Regarding claim 12, selection of a vulcanization temperature would have been within purview of the skilled artisan at the time the invention was made depending on the material of the hose.

21. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler '039 and Galloway as applied to claim 11 above, and further in view of Kolnische and Enomoto.

With respect to claim 3, all the limitations were addressed with respect to claim 11, except pressurizing the extruded rubber hose and trapping the air inside the hose by sealing engagement of the hose with the mandrel and pinch rollers.

It is known in the art to make a rubber tube by extruding the rubber tube over a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78).

It is also known in the art to make a rubber hose by extruding a rubber tube over a mandrel, supplying gas through the mandrel to the inside of the tube and trapping the gas inside

the tube, applying reinforcement to the tube by means of a braider, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube to form the hose, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to pressurize the extruded rubber hose of Satzler by supplying air through the mandrel of Satzler over which the hose is extruded wherein the skilled artisan would have appreciated the air being trapped inside the hose by sealing engagement of the hose with the mandrel and pinch rollers of Satzler because such is known in the rubber tube extruding art, as taught by Kolnishe, wherein the air would prevent the tube from collapsing during processing steps prior to vulcanization; especially since it is known in the hose making art to pressurize an extruded hose by keeping a gaseous fluid trapped inside the hose during formation thereof, as taught by Enomoto.

With respect to claim 17, all the limitations were addressed above with respect to claim 3, except extruding the rubber of Satzler onto, into and through a woven fabric.

Satzler teaches braiding reinforcement 16 onto the extruded rubber 26 and then extruding rubber 28 onto the reinforcement (column 3, lines 6-19). The skilled artisan would have appreciated that the braided reinforcement is a woven fabric (see US 4488921; column 6, lines 18-22). The skilled artisan would also have appreciated that the braided reinforcement would have spaces/interstices and therefore the extruded rubber 28 would pass through the spaces/interstices.

22. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler '039, Galloway, and the collective teachings of Kolnische and Enomoto as applied to

claim 3 above, and further in view of Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, all the limitations were addressed above with respect to claim 3 except a check valve being located in the mandrel.

Satlzer '039 in view of the collective teachings of Kolnische and Enomoto teach the air being supplied to the interior of the hose as it exits the mandrel.

It is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized air of Satlzer '039 by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Satzler '039 teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 3.

Regarding claim 36, the skilled artisan would have appreciated that the air inside the hose would control the diameter of the hose.

23. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler '039, Galloway, the collective teachings of Kolnische and Enomoto, Hopkins, and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler '316.

Regarding claim 36, if it is not taken that the air inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

24. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of the collective teachings of Kolnische and Enomoto and also in view of Galloway.

With respect to claim 17, Tanaka is directed to making a hose. The reference teaches extruding rubber resin (column 8, lines 36-38 and 39-40) onto, into, and through a woven fabric 4 (Figure 3; column 3, lines 20-25; column 6, lines 26-27; column 8, lines 50-52) located on a mandrel 25 (Figure 10; note Figure 10 is embodiment that is variation of that depicted in Figure 4 when resin not extruded; column 5, lines 14-15), which only has a length long enough to

complete extrusion (column 6, lines 43-46), passing the mandrel-less hose through a cooling bath 71 to solidify the resin (column 8, lines 54-55), and guiding the hose by means of rollers to a take-up winding machine (column 8, lines 18-25).

The reference is silent as to pressurizing the hose with a gas, sealing the inside of the hose with respect to the mandrel, pulling the hose through a non-contact heater to vulcanize it, and pinching and sealing the vulcanized hose as it leaves the heater.

As set forth above in paragraph 13 above, the collective teachings of Kolnische and Enomoto teach extruding rubber over a mandrel, pressurizing the hose by supplying air/gas through the mandrel and trapping the air/gas inside the hose by sealing engagement of the hose with the end of the mandrel and pinch rollers located downstream of the mandrel, and vulcanizing the hose from the outside to the inside.

Although Tanaka teaches cooling the extruded resin to solidify the same and form the finished hose, the skilled artisan would have appreciated that processing steps subsequent to extrusion, such as heating and/or cooling, are largely dependent on the type of material used to make the hose. Tanaka is mainly concerned with formation of the woven reinforcement and not the type of resins extruded onto it nor the subsequent processing steps used to make the finished hose, and the type of resins used are not critical to the invention such that Tanaka teaches using a variety of resins including rubber (column 8, lines 32-37), which is elastomeric.

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to pressurize the extruded rubber tube of Tanaka by supplying air through a mandrel over which the tube is extruded and trap the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of the vulcanizing zone because such is known

in the rubber tube extruding art, as taught by Kolnische, wherein the air would prevent the tube from collapsing during processing steps prior to vulcanization; especially since it is known in the hose making art to pressurize an extruded hose by keeping a gaseous fluid trapped inside the hose during formation thereof, as taught by Enomoto.

As for vulcanizing using a non-contact heater, it is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Enomoto as a whole would have appreciated that the vulcanizing means is not critical to the invention and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

Allowable Subject Matter

25. Claims 25-30 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. See paragraph 11 of the office action dated 7/8/03 for reasons for allowance.

26. Claims 13 and 18-20 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. See paragraph 12 of the office action dated 7/8/03 for reasons for allowance.

Response to Arguments

27. Applicant's arguments filed 7/12/04 have been fully considered but they are not persuasive.

28. On pages 10-11 of the arguments, Applicants argue that the skilled artisan would not be motivated to use a microwave heater as an alternative to the heated tube 115 of Merck '523 because the heated tube 115 supports the "fluid mandrel" within the hose and without the heated tube a sag would occur.

The examiner respectfully points out that Dougherty '921 teaches passing the hose through a chamber 45 in which microwave energy is applied to the hose (Figure 2; column 8, lines 51-66). When combining the teachings of Merck and Dougherty, as the examiner did in paragraph 9 above, the skilled artisan would have appreciated that the entire chamber 45, and not just the microwave energy within, would be used as an alternative to the heated tube 115 of Merck such that the chamber 45 would now serve to support the "fluid mandrel" within the hose of Merck.

29. On page 11 of the arguments, Applicants argue that claim 36 is patentable because the check valve of the present invention does not control the diameter of the hose rather it controls the direction of airflow.

The examiner respectfully points out that this argument is not commensurate with the scope of the claimed invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **571-272-1223**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine R. Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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